**General Definitions and Conventions:**

1. These collections of simulation objects will be called one of the following (TBD):
   1. (Workspace) Object Aggregates
   2. (Workspace) Object Groups
2. Object Groups are a display-only provision; they have no effect on the model solution.
3. Object Groups will be supported on the Simulation Workspace, and possibly the Geospatial Workspace, but not on the Accounting Workspace. (See related open issue).
4. An Object Group will appear on the workspace as an icon, similar to the existing simulation object icons (40x40 pixels).
5. An Object Group will have a name which is displayed on the workspace under its icon.
6. Any given simulation object can be a member of only one Object Group.
7. The definition of an Object Group will be persistent in the RiverWare model file.
8. Each Object Group will have two display states:
   1. "Collapsed": Only the Object Group icon is shown; the group's member object icons are hidden.
   2. "Expanded": The Object Group icon AND all if the group's member object icons are shown.

**Operations of Object Groups:**

Object Group icons will have a set of context menu operations different from those of the [simulation object context menu](http://cadswes2.colorado.edu/%7Ephilw/2014/WsObjAgg/AnalysisImages/ObjCtxMenus.png). This is an extensive menu, it should probably also be in the menu bar. Unless otherwise noted, the following operations are presented as context menu operations on the Object Group icon:

1. **Create Object Group:** context menu operation on the workspace. All currently selected objects are made members of the group. Selected objects which are a member of another group are quietly removed from that other group.
2. **Expand / Collapse Group** ... (two radio button).
3. **Add Object to Group.** This could be implemented with either or both:
   1. dragging an object icon over to an object group icon.
   2. context menu operation on simulation objects ... submenu of object groups.
4. **Remove Object from Group** ... submenu of member objects.
5. **Open (Member) Object** ... submenu of member objects.
6. **Edit Group Name.**
7. **Delete Object Group** ... (with confirmation). This will not cause the member simulation objects to be deleted.

It will be necessary to "Expand" an Object Group in order to access context menu operations which are available only on the [simulation object context menu](http://cadswes2.colorado.edu/%7Ephilw/2014/WsObjAgg/AnalysisImages/ObjCtxMenus.png), e.g. creating new links between objects.

**Display Provisions:**

1. We will initially provide only a single icon to represent Object Groups.
2. The tooltip on the Object Group Icon will list the member simulation objects.
3. The simulation object icon tooltip (which currently shows just the name of the object) will also include, in parentheses, the name of the Object Group of which it is a member (if it is a member of a group).
4. When an Object Group is collapsed:
   1. Its individual member object icons are hidden.
   2. Links between the group's objects and other objects (not in the group) are drawn to the Object Group icon.
   3. Links between the group's objects are not drawn (of course).
5. Objects in the group maintain their workspace position information
6. Object list on workspace shows object groups. When selected the group icon is highlighted (usual behavior). If expanded, all the objects in the group are highlighted.
7. When an object name is selected on list, if the object is in a group that is collapsed, the group object is highlighted. If the group is not collapsed, the usual behavior exists.

Advanded Display Provisions (to be considered):

1. Distinct icon appearances for the Expanded and Collapsed states of an Object Group. Perhaps the Expanded state would be shown as partially transparent (faded) (or grey).
2. When mousing over an expanded Object Group Icon, a yellow halo is drawn around its member objects' icons.

**Additional Behavioral Provisions:**

1. Object Group icons will be **selectable,** and can visually be part of a multiple simulation object selection. Multiple simulation object and Object Group selections can be dragged to reposition them on the workspace.
2. Selecting an Object Group automatically selects all of its member simulation objects.

**No Current Requirement for an "Open Object Group" Dialog.**

None of the operations involving Object Groups currently require the creation of a new "Open" Object Group dialog. But a full "Open Object Group" could certainly be implemented if, for example, we prefer not to rely on context menu operations for managing an Object Group.Opening the group should show list of objects; selecting one will open the object.

Naming and renaming an Object Group could be implemented with the "unique name editor" dialog which shows a list of the existing names (of the particular type of object).

**Open Issues**

(1) Object Group "Scope" with respect to the Workspace.

Should an Object Group exist only within the context of the Workspace (i.e. Simulation vs. Geospatial) within which it is created? Or would it operate in all workspaces in which Object Groups are supported. Should operate in Geospatial.